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1) STROTHER, E.

2) HANCOCKE, J.

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4) BLACKMORE, Sir R.

Blackmore

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Sir Richard

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<see p. iv.>

DISSERTATION,

ON THE

GRAVEL and STONE,

SHEWING,

- I. Their Nature, Causes, Difference, and Symptoms.
- II. The Method of Curing them.
- III. How to Ease and remove the Fits when present. And
- IV. To prevent them for the Future.

With their proper Remedies, Prescrib'd; and easily to be Prepared, by the Patients themselves.

Written, in Compassion to those, who are unhappily Afflicted with these Torturous Diseases, by a late Learned and Eminent Physician of the College, from his many Years practical Observations and Experience, in these Cures.

And is allow'd, by every one of the many Physicians of Note that have perus'd it, (and must, by the whole Faculty of Physick) to be the most rational Discourse, on the *Gravel and Stone*, ever written; and the Method and Medicines for their Relief and Cure, the most Safe and Efficacious, that can be advis'd to.

L O N D O N:

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T H E
P R E F A C E.

THE Person, who Publishes this short Discourse, and Directions, having Experienc'd, for several Years last past, in his own Practice, both as a Physician and Surgeon, the great, and indeed wonderful Effects of the Methods and Medicines, herein laid down and Prescribed, for the Ease and Cure of the Gravel and Stone, thought it a Duty incumbent upon him, to make the same known as much as possible, for the universal Benefit of Mankind; that those who unhappily labour under the Severity of these cruel Diseases, and have not heard of the Remedies, and may at any Time stand in need of the Assistance that will be afforded

by them, may have it in their Power, wherever they may chance to be, (so they have but the Book in their Pockets) of applying them, and that either prepar'd by themselves, or having them prepar'd by an Apothecary.

The whole of what is here Written, is, with some variations, and small additions, taken from the Works of no less a Man, than the late Worthy Sir Richard Blackmore, Knt. Doctor of Physick, and Fellow of the Royal College of Physicians, in London, and in his Time, Physician in Ordinary to his late Majesty King William, by saying of which, it is enough without any Encomium of mine, or any ones else, as to his Learning, consummate Knowledge, and long Experience, in the Cure of Diseases in general, as well as of these in particular, his Fame therein, as well as his Integrity, Humanity, and compassionate Regard to his afflicted and distressed Patients, being sufficiently known in London.

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All therefore that I shall say, is, that every Patient, under the Torture of these merciless Diseases, will not fail (I speak by repeated Experience) to find Relief and a Cure, if they but make timely and distinct Application of the Remedies, and live up to the easy Rules and Directions, so plainly and faithfully, without any reserve, herein laid down and explain'd: And as they are Medicines, not prescrib'd at random, or at a venture, but upon the judicious and sedate Consideration of the Author, in a regular Way, grounded upon Reason and long Experience, and which the Doctor had ever found Successful, when he had been call'd to the Relief of Patients in these deplorable Distresses, they are the more to be regarded, and particularly so, as they in every Circumstance, have corresponded with the Opinions of the best of Physicians, and by consequence must stand approv'd, by the whole Faculty of Physick.

And

And tho' the Doctor seems to explode the possibility of Dissolving the Stone, yet he has confin'd his Opinion to those only of them, that are hard and compact, those of them that are porous, light, and friable, he admits may be dissolved, or at leastwise crumbled, or divided into small Fragments or Parts, so as to be rendred passable, and has herein also Prescrib'd such Remedies, which he has long experienc'd to have done it.

Physicians, I well know, very much differ as to the possibility of Dissolving the Stone, many of them affirming it has been done, without any distinction of hard or soft, and may be daily done, and have recited the Cases of many Patients cured thereby; nor are there wanting as many, who as flatly deny the possibility thereof: For the first, I have now before me, the Works of several Authors of good Credit, and the Cases of divers Patients, in confirmation of their Assertions; and in particular,

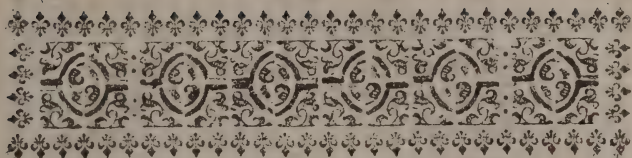
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ticular, one of the said Authors, lately fam'd therein, says, that tho' the Dissolution of the Stone, by Medicines, has been for a long Time exploded as impracticable, yet I must confess, says he, I never could come into that Notion: I always was of Opinion, says he, that no Distemper was Incurable, and that only our Ignorance of the Causes, made some more difficult to handle than others: But that if we could see into the original Spring of the most obstinate and stubborn Maladies, we should find them as tractable, and easy to Cure, as those that lie more obvious to our view: And I perswade myself, continues he, that if the Positions I have advanced, in defence of a Dissolution of the Stone, be brought to the Test of Reason, the Arguments will be unanswerable, and that tho' some may object against the most evident Matters of Fact, yet no Arguments are strong against Demonstration.

And

And in confidence of these his Sentiments, and proofs of his Assertions, he names several Cases, where there has been a manifest Dissolution, by several Prescriptions he gives, and one of them in particular, which he says, he has more than ordinary experienc'd successful, and recommends it as a most Sovereign Lithontriptick, and believes, that a more powerful Dissolvent, is not yet known to Mortals.

But of these I shall say more in a Second Part, which I purpose in no long Time, GOD willing, to make publick, according as I have noted, at the End of this First Part.



I.

*Of the Nature, Causes, Difference,
and Symptoms of the Gravel
and Stone.*

THE Disease of the Stone, either in the Kidneys or the Bladder, and that of the Gout, which are nearly related, are two of the most cruel and inexorable Tyrants that persecute the Race of Mankind: So great is their Violence, and so unextinguished their Fury, that they afflict the unhappy Patients with such frequent and insufferable Tortures, as make Life an undesirable Possession, and rather a Burthen too hard to bear, than a State of Satisfaction and Enjoyment. And had not the All-wise Divine Author, planted in our Nature, so strong an Aversion to Death and Dissolution, it is highly probable that many, grown utterly impatient of undergoing such

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a Weight of Misery, would lay Hands upon themselves, and soon put an End to their Calamities and their Lives together, the Grievance of the first is much over-balancing the Pleasure of the last. Some, it is true, of these forlorn Creatures, have endeavoured to ease themselves by adventuring on these tragical Expedients, and, no doubt, Multitudes more would follow their Example, did not a Principle of Religion among Christians, and a powerful Instinct of Self-Preservation among all Men, controul their Impatience, and prevent self-execution: Nor is it a Wonder they should prefer the Shades and Tranquility of the Grave, to the Heats and Inquietudes of such acute Diseases,

But it must be allowed, that of this Pair so nearly allied, the Stone and the Gout, the first is the most terrible, and distinguished for its Pierceness and Cruelty. This Lictor and Minister of Death, inflicts, above all others, the sharpest and most insufferable Tortures; What a melancholy Scene! What a moving Spectacle of mortal Nature is it, to see the unhappy Patient extended on the Rack, groaning and crying out in Agonies of Distress and unspeakable Torment: E'er Night is half spent, he wishes for Day; when Day appears, he longs for Night; Distracted
with

with his Sufferings, he lies wakeful, counting the Hours, any one of which, when protracted and multiplied by raging Misery, seems a numerous Train, so sluggish and unprogressive does Time grow under grievous Sufferings. He changes his Pillow, but not his Pain; new-makes his Bed, but keeps his old Inquietudes, and though he often turns from Side to Side, he never leaves his Agonies behind: They, hapless State! know no Cessation or Interruption: If they sometimes remit and abate their Violence, they soon recover their Strength, rekindle their Rage, and insult the Patient with as great Fury as before. It must therefore be a commendable Action, and becoming an *Æsculapian* worthy to endeavour, with all his Might, to repel or dislodge this Plague that so much infests Mankind; and therefore accordingly I have undertaken to assist those who have already attacked this Pest with Skill and Vigour: For this is not the Work of a single Aggressor, but as in hunting down a Forest Beast, or that enormous Bird the *Ostrich*, many Champions unite their Power, armed with various Instruments of Death, Cutlasses, Lances, Hooks, and Javelins, that with different Weapons and mutual Assistance they may subdue the Enemy, or at least

oblige him to retreat; so, as a ready Auxiliary, I bring my Forces, such as they are, to join those of abler Combatants, in order to quell this formidable Enemy, at least to diminish his Strength and restrain his Fury.

As to the Nature of the Disease, there are scarce any Part of the Body privileged from breeding Stones in their larger Cavities, or more minute Interstices, which are, in some measure diversified, according to the Nature of the Bowels or Organs where they are produced. They are found sometimes in the external Muscles of the Body, as well as in the Lungs, the Stomach, the Liver, the Gall-Bladder, the Bowels or Contents of the Abdomen, as well as in the Tongue, the Brain, and even the Blood it self: For several credible Authors have affirm'd, that upon opening a Vein, small Stones, together with the spouting Blood have rush'd into the Receiver. In all which Nest, the petrifying Principles, meeting and embracing each other, produce a single Stone, or a Quarry of them. But this Discourse is confin'd to the Stone in the Kidneys, and that in the Bladder, which in this Dissertation I shall consider as the same, and not as the Disease of a distinct Species. When it is formed and settled in either Kidney, it is accompanied with various Symptoms, according

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according as it is large or small, smooth or rugged, fixed or loose, closely or slightly coherent, *i. e.* hard and solid, or friable and porous.

Of the minute Stone, that is, the Grit and Gravel, formed of sandy Rudiments in the Kidneys or Bladder, which however are perfect Stones, there are three Sorts distinguished by their Colour, that is, White, Yellow, and Red. White is the native Complexion of these little Bodies, Atoms indeed, in respect of those of the largest Dimension, as are the Sands on the Shore, when compared with the Rock at whose Feet they lie: These primitive Stones are, however, so close and unporous, that the Cohesion of their Parts, are not to be unclasped and dissolved, but with great Difficulty, insomuch that they imitate the Hardness of the Diamond, and will polish Glass, like the Dust of that Jewel, as celebrated Authors assert; and it facilitates our Belief of the indissoluble Structure of this Grit, when we reflect on the like Quality in that called Hour-Glass Sand, which is found, by Experience, to be less porous, or more solid than Flint; and therefore the Operators in Glass have laid aside the first, and now employ the last, as Materials for their finest Works. But these minute white
Stones,

Stones, cannot, as I conceive, give nephritick Pains, or a Fit of the Stone, unless a Collection or Congeries of them, are involved or united by some adventitious, mucous, slimy, or other anomalous Matter, so as to form a Moles or Bulk, large enough to obstruct the Mouths or Channels of the Urinary Passages, and that, it is true, may sometimes happen ; but, generally speaking, since the minute pale Stones are so smooth and small, that they may enter with Ease the Orifices of the Urinary Aquæducts, and passing through those Conveyances, may, without creating Pain or Trouble, be excluded with the common Stream ; and though there should be a great Quantity of that small incoherent Sand, it may, however, without Difficulty, flow through the Ureters into the Bladder with the serous Current, and together with it be discharged.

As to the Yellow Gravel, it is evident that the minute Particles that compose it, are stained with that Colour, by the alkalizate or lixivial Salts of the Urine, which abounds with such Contents : And this Mixture in the small Yellow Stones, is the Reason why they are less solid, and more dissoluble than the White of a purer Composition ; which is likewise observ'd, and from the same Reason,

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in the Stones generated in the Receptacle of the Gall, whole Parts have not that strict Connexion and close Structure as the White.

The Red Gravel receives that Complexion, from being infected with a little Drop of Blood issuing from some lacerated Vein where the Gravel lay.

All these, if they are ragged and uneven, may, by pricking, vellicating, or wounding the tender Membranes that include them, cause either duller and heavier, or more acute Pains, according as they are arm'd with more or less pointed Angles whilst they lie in the *Pelvis* or Basin of the Kidneys, and there roused and disturbed by the Motion of the Body on Foot or Horseback, rub upon and fret the neighbouring Membranes; and so nephritick Sufferings may arise from Gravel, which consists in real and perfect Stones, as before observed, though called Sand, or a friable, gritty Matter, by Reason of their small Dimension. This is the first nephritick Symptom before a larger Stone is formed, which, however, is vexatious, and often attended not only with Pain, but much Inquietude, Sickness of the Stomach, and a general Disorder of the whole Oeconomy, while the sandy Atoms, that lie heaped up in the Kidneys, are worked and agitated

tated by the Motion of the Back or Loins, irritate and gaul their Membranes of exquisite Sense during their Confinement in those Lodgings.

It ought to be observed, that there are often found in the Urine of Persons in good Health, or at least not much distempered, a Red Gravel or Sand, that sticks to the Sides of the Urinal or Chamber-pot that receives it; but this is not the genuine Gravel, that causes nephritick Sufferings, but the Production of the Blood in Persons of a scorbutick Disposition, or a warm Temperament, and is distinguished from the true Gravel in this, that the last falls down, immediately after the Urine is rendered, to the Bottom of the Receiver, whereas the spurious Kind does not break off from its Mixture and Union with the Urine, till after some Hours standing in that Vessel, when it is at length loosed from its Embraces, precipitated and thrust down by the Cold of the Air, and afterwards, if the Urine be gradually heated again, it will recover its former Connexion with it, which is not the Case of the genuine nephritick Gravel: Besides, there is often observed in Persons of such a Constitution, a thin Substance floating on the Surface of their Urine, imitating melted Fat or Grease, but when it is

is skimmed off, and dried upon a Paper placed in the Sun, it discovers it self to consist of gritty saline Concretions, united together by some viscous or slimy Bonds.

If the Stones are of a larger Size than those called Sand or Gravel, they affect Humane Bodies with yet more painful and afflictive Symptoms, and supposing that their Figure is unequal, and varied with many Angles, then their Points, especially upon bodily Motion, vex and vellicate the Repositories where they are nested, and as so many sharp Thorns in the Sides of the *Pelvis*, continually grieve, prick, or wound their Membranes; whence arises the frequent Discharge of bloody Urine, a common Symptom of this cruel Disease, which, if fresh, and newly let out of the Veins, gives the Urine a red Colour, and the Blood is discernable to the Sight; but if it has lain, for some Time, extravasate in the Bladder, or if but a few Drops stay in that manner in the Kidneys, by turning to grumous and coagulated Clots, they impart a dark and blackish Tincture to the Urine, not unlike to that of Coffee; this is a Symptom likewise that often accompanies this Distemper: It is true also, that pale limpid Water sometimes attends the Paroxysms of the Stone, like that observed in

Convulsive, Hypochondriacal, and Hyfterick Passions, and from the same Cause, that is, the Spasmodick Disorder or Contraction of the System of the Nerves during the Fit.

Another Symptom, that accompanies the Stones last described, is great Sicknels of the Stomach, Nausea, and frequent Vomitings, or Strainings to Vomit; for while the Fibres in the Kidneys are grieved, and lacerated by the rough Stone or Stones bred and confined there, the Suffering is propagated to the Stomach by a Consent of Parts, or Communication of Nerves, from one of those Bowels to the other; and this is so distinguishing a Symptom of this Disease in the Kidneys, that other Symptoms without this, are not sufficient to induce the Physician to pronounce the Distemper the Stone.

If the Stone in the Kidneys be some Degree larger, and likewise jagged, it creates unsufferable Pains, while it remains in the *Pelvis* or Basin of the Kidneys, grating and lacerating the enclosing Membrane, or while it strives through the Ureters, and wounds the Fibres as they make their Way.

When the Stone formed in the Kidneys is grown yet larger, and so disproportioned to the Mouth of the Ureter, that it cannot enter, even though its Superficies is smooth and equal,

equal, it will obstruct the Orifice of that Tube, while it attempts to pass into it, or will stick in the Channel of it; and while it continues fixed there, as it stops the Current of the Water through the Pipe, so it creates exquisite and enormous Misery, by distending the sensible Membranes; and if it be unequal and ragged, it will produce the most afflictive Tortures, till it is protruded by Art or Nature through the Ureter, and excluded into the Bladder. This happens as often as the Stone grows to a greater Size than is suitable to the Inlet and Passage of that Tube: And the Effect is the same if the Stone, though not of a disproportionate Bulk to pass the Ureter, should however lye a-cross the Orifice, for then it will obstruct the Descent of the Urine, and create great Disorder, till it find a proper Position, and its Figure is adapted to the Inlet, and then it enters and is at last discharged.

After the Stone has made its Passage through the Ureters for some Years, by stretching and enlarging the Road so often, it becomes capacious enough to receive much larger Stones than the first, and to let them through into the Bladder; so that the Cavity of the Ureter, through which they have passed so long, is by Degrees sometimes extended to a Finger's Breadth, as unquestionable Authors assure us.

The Stone of the Kidneys is likewise considered as loose or fixed; if as loose and floating, or not adherent to any part of that Bowel, but is always attempting to pass the Ureters to the Bladder, it produces the painful Symptoms before described; but if it is fixed, it then Nests itself and settles in the Substance of the Kidneys, where it grows by Accretion of Parts, and spreads like branching Coral through the Body of the Kidney; and while it lodges there in this quiet and inactive State, the Patient may sometimes feel Heaviness, or a Weight in the Back, which however is but an inconsiderable Suffering; and some in this Condition have felt no Symptom at all, and dyed of other Distempers; and when they were, after Death, dissected by the Surgeon, a considerable Stone has been discovered, propagated through the Kidney, of which however the Patient never complained.

And this was the Case, as I have been informed of the late Lord *Mohun's* Father, who being open'd after he dyed of a Wound received in a Duel, a large Stone was discovered spreading through the Kidney, of which notwithstanding in his Life Time he was entirely unconscious. I likewise knew an eminent Divine, of a very Lean and Unmuscular Constitution, who told me in Conversation, that
suspecting

suspecting he had a Stone in the Kidneys, tryed one Night in Bed, if he could not feel it, and by pressing his Loins, much emaciated with his long Fingers, he assured me he felt the Stone, and then, said he, I reflected it must be a large one propagated through that Bow-el, and therefore that no Medicinal Methods should be attempted to break it, lest the Fragments falling into the *Pelvis*, should stop the Passage of the Ureters, and create great Fits of the Stone; upon this, said he, I fell asleep, and during many Years, thought of it no more, till of late some Incident, which he named, and I have forgotten, brought again to his Mind this Observation, and when he (some Years afterwards) Died and was Dissected, a large Stone was found in his Kidney, which though he felt, as said before, yet lying undisturbed and quiet in its Nest, it gave him little Uneasiness.

The Stone we are discoursing of is either lighter or heavier, or which is the same thing, more porous and friable, or more close and solid. The Particles that compose the first, hang together by a slight Connexion, which is easily broken and dissolved, like Flocks of frozen Snow, the Sides of a Sponge, or the unsolid and porous Substance of the Pumice-Stone, and these by any internal or external Violence,

or

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or milder Motion, are often separated and crumbled into Parts, that drop into the Ureters and pass into the Bladder, to be discharged; and these Fragments, like the small sandy and gritty Stones spoken of before, produce the same troublesome Effects.

I have accounted for the Stones, that owe their Production to the Kidneys, and shall now pursue their Progress and follow their Course to the Bladder. When the Stone generated in the Urinary Strainer is discharged by the Ureter into the common Receiver, it too often happens, that it acquires so large a Dimension; that the Outlet of the Bladder is not wide enough to let it through, and therefore of Necessity it must remain imprisoned there, where by the Accession of new petrifying Particles, and gritty Matter continually descending from the Kidneys, and adhering to it, its Size is gradually augmented, till it is yet more incapable of being excluded, where if it is loose and floating, it produces many grievous Symptoms; for though it be only smooth and equal, and so does not lacerate the Bladder, yet it will often, as it plays against the Neck of it, and attempts to pass through, stop the Mouth of the Aquæduct, that conveys away the Urine, and by so doing, produces very great Torment, while the Bladder is excessively distended, and
unable

unable to discharge the enclosed Deluge; and if the Stone be uneven and rugged, it will by goading and wounding the encompassing Membranes, create exquisite Pain and bloody Urine, and by long repeated Cruelties of this Kind, it frequently forms an Ulcer in the lacerated Part, which is discovered by the Secretion of putrid Matter mingled with the Urine; for when it has stood some Hours, a pale slimy Sediment is precipitated to the Bottom of the Receiver, like the Excrement of the Nose, or the Whites of Eggs, and is distinguished, from the like Matter that descends to the Bladder, from an Ulcer in the Kidneys, by the Odour, which is strong and fætid, if the purulent Matter comes from an Ulcer in the Bladder, but that derived from one in the Kidneys has no such offensive Smell, as said above. And the Case is the same when an Ulcer arises in the Kidneys or the Neck of the Bladder, not from the Stone but from other Causes, such as produce Ulcers in the Lungs, in the Intestines, or other internal Parts, that is, the Impurities and incongruous Particles, which by Reason of their disproportionate Size and Figure, cannot slide through the strait Passages of the Glands, but stick in them, till more of the like Nature entangled there, encrease the Obstruction and swell the Parts, whence by Degrees they

they are inflamed, putrify, and by their Disruption, form an Ulcer; and when this Disease is produced in the Kidneys or the Bladder, the putrid Contents issuing from them, and together with the Urine excluded into the Receiver, shew themselves, as I have said, by their viscous and ropy Quality, and are diversified by their fætid or inoffensive Smell: And it should be observed, that their mucous and slimy Nature, distinguishes these Contents from others, that proceed from a scorbutick or unhealthful Habit of Body, when much white, mealy, and light Matter appears in the Sediment, and which being without Connexion, upon shaking the Glass will rise and float incoherent in the Urine, but unslimy, as well as without Fætor: This therefore, as I have said, does not proceed from any internal Ulcer, but is a Defect arising from some irregular and depraved State of the Blood, that communicates with its Serum such Matter to the Kidneys.

The Suppression of Urine, occasioned by a Stone too large to pass the *Urethra*, is not attended with Sickness and Vomiting, as when a Stone sticks in its Passage through the Ureters, there being no Communication of Nerves between the Bladder and the Stomach, to convey the Sensations from one to the other. But
exquisite

exquisite and grievous Pains however attend it from the Distention of the Bladder, as I have said, and sometimes a smaller Stone, that has entered the Mouth of the *Urethra*, yet being too great to slide through, stops near the Entrance, or in the Middle, and creates a total Suppression of Urine, as well as great Torment.

I have now accounted for the Nature, Properties, and Symptoms of this Disease, and have likewise in carrying on my Discourse, intermixed an Enumeration of its various Kinds, discriminated by the Receptacles, where the Stone is contained, or by its different Colour or various Shape and Figure; and now I shall proceed to search into the Causes of it.

The remote, antecedent Cause of the Stone, is a defect in the digestive Faculty of the Stomach, or that of the Blood, or nervous Juices, whence such Impurities and feculent Portions remain, as produce the Coagulations and Concrescencies, that become the Foundation of the Stone, whose Rudiments and primitive Materials, consist in a close Combination of a volatile in a superior, and acid Salt in an inferiour Proportion. That these two are the petrifying Principles, is known by Experience, that shews us that this is the Effect of Acids and Alkalies meeting together; as for Example, *Juice of Lemon, and Salt of Tartar.*

Let it be supposed then, that from the inordinate and depraved Concoctions before-named, such hard Coalitions, slimy Coagulations, or cretaceous Confederacies should be left behind, and it is easy to conceive how, when yet more hardened and prepared in the Blood, they may by the Power of the urinous Salts in the Kidneys, be soon converted into gritty, sandy Atoms, which, clustering together, and cohering, form at length a Stone of the lowest Size, that by the daily Accession of new similar Particles, acquires a far greater Dimension in the Kidneys, and yet a greater after its Descent from that Bowel to the Bladder; for while it is detained, from being too large to be excluded, it has more Room to receive Augmentation, whilst constantly fed by the sandy Rivulets, that empty themselves through the Outlets of the Ureters into that Cistern, where it grows by such Accretion, till sometimes it becomes exceeding large: Thus petrified Fossils and Flints in the Earth, as well as rotten, Sticks and Pieces of Wood turned to Stone, owe their Growth, as well as Production, to lapidescent or stony Particles, that continually accede to, and strictly embrace the former collected Materials: But as to the intrinsic Nature of the Stone bred in living Creatures, and those last named, that is, Minerals and Vegetables,

tables, there is a vast Difference; for the greatest Part of the first are formed of volatile Salts, or Animal Alkalies, but the other are not composed of any such Ingredients. It is truly remarked, that those who are obnoxious to the Stone, are generally of a hot Constitution, as it is likewise observed of gouty Patients, by which means their Blood is more inclined to breed cretaceous, hard, and gritty Combinations, which by a certain Degree of Heat, are soon advanced into proper Materials for the Gout and Stone, Diseases so nearly related, that they are easily convertible into each other. But of these Subjects I have discoursed at large in my Treatise of the Gout, to which I refer the Reader.

When the Seeds or Principles of the Stone, that is, the viscous, tough or sandy Concretions, not to be dissolved and separated from the Blood, bearing however a Figure and Dimension proper to enter the papillary Glands, the Strainers in the Kidneys, they are there yet more indurated, and acquire a gritty and fabulous Constitution; though even in the Blood itself, before the Serum is separated from it by the secretory Glands, small Stones are often formed, as they are in all the Parts of the Body, as before observed.

It is remarkable that those Countries, that lye upon the River *Rhine* and the Northern Parts of *France*, who drink a thin, sharp, pale Wine, which is more replenished with *Tartar* than other Fruits of the Vine, concocted by a hotter Sun, are most obnoxious to the Stone in the Kidneys: For such Wines convey to the Blood in great Plenty, a Sort of petrifying Fluid, whose redundant acid Particles, before their Nature is changed to an *Alkali* by the active Principles of the Blood, meeting and combining with the volatile Salts there, the Result is a hard and tartarous Production, easily formed into a Stone.

The voluptuous Life of those that eat and drink deliciously every Day, cannot but administer to the Blood, the Seeds and Principles of the Stone, in Constitutions disposed and prepared for that Distemper: For these costly and luxurious Meats and Drinks, excessively and constantly ingested, being unequal to the digestive Power of the Stomach, fill it with a Load of Crudities and unconcocted Foods; which transmitted by the Ministry of the lacteal Passages to the Veins, communicate to the Blood, not only great Plenty of noxious Impurities, but likewise a rich Chyle, abundant in volatile Salts, with such a Proportion of Acids, as are apt to create this Distemper.

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A sedentary and inactive Life, especially when the Persons are of a vigorous and hot Complexion, much promotes the Production of the Stone; for while the Blood runs lazy and unagitated in its Channels, for want of due Labour and Exercise of the Limbs to push on its Streams with due Celerity, it is easy to conceive how the crude and impure Parts run into various Concreescencies and Coagulations. On the contrary, when due Activity, either by the Labour of the Hands, or by riding, or other Exercises of the Body, the Motion of the Blood is accelerated, it is obvious to apprehend, that by the Rencounters and mutual Collisions of the Parts dashing and rubbing upon each other, they are broken, divided and attenuated, till they become so minute and so well mixed, that the tough, slimy, and yet harder Combinations are unlocked and dissolved, by which means the Seeds and Rudiments of the Stone are prevented, and the Cause removed: And therefore in this Case, as in the Gout, the sedentary Lawyer; the over-thoughtful Person; the hard Student; and the inactive, indolent, and voluptuous Gentleman, are obnoxious to this grievous Distemper, as are likewise Men of covetous Tempers; while the laborious Husbandman, and Mechanick, the daily Traveller, and indefatigable Sportsman, are

are seldom attacked and tortured by it: For these keep the Body in a Healthful State, while their repeated Exercise helps their digestive Faculties to do their Duty, and refine the Blood, by a constant Expulsion of inordinate and incongruous Humours.



II.

*The Method of Curing the
Gravel and Stone.*

FIRST, of the lowest Degree of this Disease, that is, the small Sand-like Gritt, either White, Red, or Yellow, which though very minute, yet are true Stones, and distinct from the scorbutick Red Matter, that does not separate and fall down from the Urine, till after some Hours standing, and then is precipitated by the Impression of the Cold from the Ambient Air, as above described. The Cure of this Distemper, consists in the carrying off the fabulous and sandy Atoms, and preventing the Generation of more, and so cutting off the Supplies, that use to fill the Room of the former, that are discharged with the Urine:

Urine: And it is highly necessary to attempt this, lest otherwise the small Stones, continuing undisturbed, should unite and adhere to each other, and receiving gradual Augmentation, from new Particles daily arriving, should grow to a Stone of great Bulk, and become incapable of passing the Ureters, or at least without great Difficulty and Pain; and when they slide through and drop into the Bladder, should contract there a large Size as before described. For it is highly probable, that the Stone is very seldom originally generated in that Receptacle, and that all, or at least the far greatest Part found there, descend thither from the Kidneys, and receive their Encrease from the sandy and gritty Supplies, transmitted to it through the Ureters. It has therefore been an unhappy Neglect, committed by some Patients, that though they have long perceived a considerable Quantity of Gravel discharged with their Urine, and have felt the Trouble and Uneasiness of it in their Kidneys, have however, taken little Care to clear them of these gritty Materials, and prevent the breeding of more; from which Omission, at length, Stones of a bigger Bulk, always painful and often fatal, have been produced.

It is therefore evidently the Interest of all Persons, when they observe that a Quantity of
such

such Sand and Gravel, the Rudiments and Mother of bigger Stones, is excluded with the Urine from the Bladder, to endeavour, by proper Means, to free the Kidneys from these noxious Inhabitants, and prevent the Generation of new Supplies; and in the first Place, it is requisite to convey away the Gravel, that is already bred, for which Purpose the following Method is most efficacious.

First Purgatives.

Take over Night, going to Bed, of Elixir Salutis, three Spoonfuls; and the next Morning, drink a Quart or three Pints of purging Mineral Waters, such as those of Epsom, Dulledge, Aeton, Northal, &c. And at Night going to Bed,

Take of Milk-Water, two Ounces; compound Water of Horse-radish, half an Ounce; twelve Drops of liquid Laudanum, and three Drachms of Diacodium; make it a Draught: repeat both Medicines every other Day and Night, for three Times.

After an Interval of three Weeks do the same, and sooner, if the Symptoms of the Gravel call for it.

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Or, Drink alone, two Quarts of such purging Waters several Days, and then rest.

The Reason why these Waters are very beneficial for the Purpose intended, is, that a considerable Part of them pass by Urine; and in their Passage through the Kidneys, wash away in their Current the Sand and Gravel; and suffer them not to lodge there, till they grow to a Stone of a larger Size: And 'tis the same in respect of the Bladder; for the same Flood that rushes down through the Ureters, carries off the Gritt from that Receiver, and expels it with the Urine.

Diureticks, to be employed in the Intervals of purging, for the same Purpose, are such as follow.

Take of Roots of Chervil, Stone Parsley, Eringo, Fennel, Sorrel, each half an Ounce; of Seeds of Burdock, Anise, and sweet Fennel, each a Drachm; of Juniper Berries, three Drachms; boil these Ingredients, in three Pints of String-Water, to a Quart; add to it, a Drachm of purified Nitre; strain it, and add a Pint of Rhenish Wine: Drink a Quarter of a Pint Morning and Evening.

Or, Take Millepedes alive and washed, fifty, bruise them in a Mortar, with a

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Quarter

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Quarter of a Pint of Rhenish Wine, and four Ounces of compound Horse-radish Water; make a strong Expression for a Draught, to be taken twice a Day.

But the most effectual Diuretick for carrying off Gravel, and clearing the Parts afflicted with it, are mineral unpurging Waters, such as those of the *Bath, Tunbridge, the Spaw,* and other Chalybeate Springs: For these, rushing with a plentiful Tide through the urinary Organs where the Gravel is lodged as well as generated, disturbs its several Nests, and rolls along in its Stream, the Sand-beds it meets in its Way, till at length they are discharged in the Urine. But this is not the only Advantage, that attends the drinking copiously Chalybeate Waters; for besides this, it very much contributes the laying the Axe to the Root of the Disease, and preventing the Generation of such petrifying Seeds, as shall be shewn afterwards. There are other diuretick Remedies useful in this Distemper; as a Mixture of Water, *French Brandy,* and Juice of Lemon, called Punch, if made small, and not intoxicating, though taken in a considerable Quantity. *Juice or Syrup of Lemons; Syrup of Marsh-mallows; and fresh Oil of Sweet Almonds;* of each an equal Portion,
mixed

mixed and beat together, with as much Sugar as is sufficient to give them a Consistency, taken to a Spoonful or two often in a Day, is very beneficial; so is a Spoonful or two of *compound Juniper-Water of Cologne, or Holland, drank now and then in a Glass of White-wine*; add to these Remedies, the exercise of the Body, by riding sometimes on a hard trotting Horse, sometimes by hurrying in a Coach over paved Stones, or other rugged and uneven Ground, (if the Patient can bear it) which by the repeated working and Concussion of the Back, move and dislodge the Gravel in the Kidneys, and force it thence into the Bladder, whence it is excluded with the Water.

Now to prevent the Production of little Stones or Gravel, all those Remedies are required as most effectual, that have an operative Vertue, to loose and disengage all viscid and tough Coagulations, and dissolve the Cohesion and Structure of cretaceous and gritty Coalitions, whence small Stones and Gravel are created, some in the Blood, and others in the urinary Strainers. This is indeed a Matter of the greatest Importance in this Case; for if this is effected, the formidable and pernicious Disease will be crushed in Embrio, and not suffered to arrive at a mature State. I shall there-

fore set down the Medicines, endowed with the greatest Force, for procuring this End.

It is easy to see that those Remedies, that restore the Blood when depraved, to its native Temperament, and keep it in that just and salutary Constitution, which specifically belongs to this Animal Fluid, are in general to be chosen; and in this Case in particular, those are to be insisted on, that are most capable of disjoining and separating the associated, viscous, and sandy Particles, that conspire to the Formation of a Stone, and so to attenuate and refine them, that they may easily incorporate with the Blood, and produce an uniform and equal Mixture.

And for this Purpose, Chalybeate Medicines, prepared by Art or Nature, are the most preferable: And since Patients afflicted with this Disease, are commonly of a hotter Constitution than others, those Preparations that have the least Sulphur left in their Composition, are most beneficial to them; such as the *Salt of Steel*, or the Tincture of it in Wine: But above all, mineral Waters, impregnated with Steel in Embrio, are in this Case most celebrated, which not only dilute and attemper the Blood, and carry off in their Current the sandy and petrifying Materials, as before explained, but likewise by their active Vertue,
animate,

animate, ferment, and exalt the Blood, break the Cohesion of the knotty and cretaceous Seeds of the Stone, and by wresting the Particles from each others Embraces, prevent the engendering of this Disease, by the Confederacy of such Impurities. So that these salutary Springs, are not only highly useful in freeing the Veins from immiscible and hurtful Matter, cleansing the Urinary Channels, and rolling away in their Flood, the Gravel lodged in the Cavities, through which their Waters make their Way, but they likewise very much contribute to the Recovery of a just Crasis, or Constitution of Blood, by destroying the Principles and Rudiments of this Disease, 'ere yet they combine in a Stone of larger Size, and reach a mature State, which they effect in the Manner described.

But if hard and gravelly Materials, associate and unite in the Kidneys, by a slight Structure, and are rather entangled one with another, and hang together like a piece of Sponge, Hoar-Frost, or a Flake of Snow, than strictly cohere, whence they become very porous and friable; or if when more closely complicated and connected, they grow to a greater Bulk, and create great Pain either in the Kidneys or the Ureters, by grating the Membranes with their unequal and ragged Figure in their Passage,

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sage, or by their too large and disproportionate Size, stop at the Entrance, or in their Way through these Tubes, in such Cases, the proper Remedies do remove them from the Kidneys, and oblige them to pass the Uteters into the Bladder, are such as these.

III.

How to remove a Fit of the GRAVEL, or STONE.

Take three or four Spoonfuls of Elixir Salutis, or of the Tincture or Infusion of Sena and Rhubarb and Anniseeds, over Night, and a Quart of purging Mineral-Water the next Morning, and the Night following take this Draught,

Of Milk-Water, two Ounces; of compound Horse-radish-Water, three Drachms; of crude Opium colated, a Grain and half; Syrup of Marsh-mallows, half an Ounce; make it a Draught: And if the Stone or Gravel, be not removed, but the Fit continues, take the next Morning, two Quarts of the same purging Waters, either Epsom, Dulledge, Acton, &c. and the Night following, the same composing Draught,

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Draught, and so the next Morning and Night, for three Times, during the Fit; and if notwithstanding, the Paroxysm is still prolonged, then let the Patient take the following Draught, going to Bed, every Night, if the Pains are violent, or otherwise every other Night.

Take of Oil of Sweet-Almonds, an Ounce; of the pectoral Decoction, a Quarter of a Pint; of Syrup of Meconium, ten Drachms; make a Draught.

Take also such oily and diuretick Medicines as follow.

Take of Oil of Sweet-Almonds, and Linseed, drawn without Fire, each an Ounce; of Syrup of Lemons and Marshmallows, each ten Drachms; of Saffron, a Scruple; of fine Sugar, as much as is sufficient; let it all be well mixed in a marble Mortar, and made a Linctus. Let the Patient take a Spoonful or two often in a Day and Night.

Small Punch likewise, especially if made with Sparw-Water, is useful to push on the Stone, or Gravel, when either of them sticks in the Ureters, and to clear the Kidneys of the Beds of Sand collected there.

Juniper-

Juniper-Water, especially that of Cologne, or Holland, and the diuretick Apozem, above set down, are beneficial.

To be more particular, let the Patient in the Paroxysm, that eludes the Force of the forementioned Remedies, take the following.

Take of Flowers of Camomile, two Handfuls; Roots of Marsh-mallows, six Drachms; of wild Carrot-Seed, half an Ounce; of Venice Turpentine, dissolved with the White of an Egg, three Drachms; of the Electuary of Hiera cum Agarick, six Drachms; make it a Clyster.

Or, Take of the common emollient Decoction, twelve Ounces; adding to the Ingredients Juniper-Berries, six Drachms; Seeds of the wild Carrot, three Drachms; dissolve in it of Lenitive Electuary, ten Drachms; use it for a Clyster.

Let one of these Clysters be given every Day, for three or four Times.

For easing the Paroxysm, it will likewise be very Advantageous, for the Patient to sit up to the Waste, in a Bath of Lukewarm Water, and repeat it two or three Times, or in a medicated Bath, which may be made thus.

Take

Take of the Leaves of Mallows, Marsh-mallows, Pellitory of the Wall, each three Handfuls; Flowers of Camomile, Melilot, and Elder, each two Handfuls; Tops of Camomile, two Handfuls; Juniper-Berries, six Ounces; of Linseed, and Fenugreek-Seed, each two Ounces; boil all in a sufficient Quantity of Spring-Water, and let the Patient sit in it Lukewarm, up to the Waste, in a Bathing Tub.

In this Case also, there are vast Varieties of Remedies, prescribed by celebrated Authors, as Fomentations, Liniments, Plaisters, &c. to be externally applied, which notwithstanding, are little availing for removing a Fit of the Stone, or Gravel: The most effectual, are certainly the Use of purging Mineral Waters, three or four Times, and taking at Night, after their Operation, a Grain and half of *Opium*, as before-mentioned, or an equivalent Quantity of liquid *Laudanum*, that is, about thirty Drops.

But in Case that Method should not succeed, the next most valuable Medicines are Pills made of *Venice-Turpentine*, or rather *Chios*, taken to the Quantity of a Scruple, alone, or mixed with an equal Part of *Rhubarb*.

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Or, Thus, — Take of Venice, or Chios-Turpentine, four Scruples; of Rhubarb, a Drachm; of Salt of Tartar, half a Drachm; Cinnamon, half a Scruple; of Balsamick Syrup, as much as will make a Mass, to be formed into Pills of ordinary Size; take four every other Day, at Bed Time.

For the same End, Emulsions are conducive, such as these,

Of Sweet-Almonds blanched, number fifteen; of Seeds of Melons, Pumpions, Violets, each two Drachms; bruise them together in a marble Mortar, pouring on them, gradually, a Quart of Barley-Water; strain it for use; drink often of it, a Quarter of a Pint, or six Ounces, Day or Night.

Or, Take of Seeds of Violets, three Drachms; of Seeds of Pumpions, Melons, white Poppies, each two Drachms; eight blanched Sweet-Almonds; bruise them together in a Mortar, and pour upon them, Milk-Water, and Corn Poppy-Water, each a Pint, strain it, and make it an Emulsion to be drank as the other.

Oily

Oily Medicines, are likewise very useful, as they envelop and soften the acid and acrimonious Juices, and promote the Expulsion of the Stone, as thus,

Take two Spoonfuls of Linseed-Oil, newly drawn, without Fire, twice a Day.

Or, Take new Oil of Sweet-Almonds, and Linseed-Oil, drawn without Fire, each an Ounce; of Syrup of Marsh-mallows, and Violets, of each six Drachms; of Syrup of Lemons, half an Ounce; of Saffron, rubb'd fine, half a Scruple; mix them well to make a Linctus: Take a Spoonful often, shaking it well.

Or, Take an Ounce of fresh Oil of Sweet-Almonds, in a Quarter of a Pint of the Decoction for the Syrup of Marsh-mallows, and repeat it frequently.

Riding in a Coach, or on Horseback, in rough unequal Ground, or our paved Streets, conduces much to the Discharge of the Stone, or Gravel, when either one or 'other sticks in the Ureter, or *Pelvis*, if the Patient can endure it.

And while these Remedies are made Use of, opiate Medicines must be given, mingled with them, or alone, to abate the spasmodick Con-

traction of the tender Membranes, and give Ease to the disordered and afflicted Spirits, that they being lulled to Rest and Quiet, may cease their convulsive Grasps, and the mean Time the Stone, or Gravel, sollicitated by oily smooth Remedies, slippery and gentle Diureticks, may slide through the Ureters, and drop, or pass, into the Bladder without Resistance.

Take of crude Opium, dissolved and strained, a Grain and half, or two Grains; of the pectoral Decoction, a Quarter of a Pint; Syrup of Lemons, three Drachms; make it a Draught, to be taken at Night, or at any Time when the Pain is violent, and repeat it as the Symptoms shall require.

Or, Take of Cinnabar of Antimony, half a Scruple; Crabb's-Eyes and Coral, of each six Grains; Laudanum Opiatum, a Grain and half; make it a Powder, to be taken as the Draught now prescribed.

If the Patient is disposed to Vomiting, or straining to Vomit, let him take two Spoonfuls of the following Mixture, and repeat it four or five times, once in four Hours,

Take of Mint-Water, or Barley Cinnamon-Water, two Ounces; of Juice of Lemons,
two

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two Ounces; of Salt of Wormwood, a Drachm and half; of Laudanum, a Grain and half; make a Mixture.

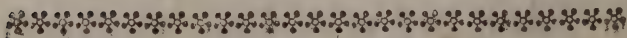
For easing the Pain, and facilitating the Passage of the Stone, or Gravel, various diuretick Remedies are recommended, by eminent Physicians, the following Decoction of *Farrestus*, is for this Purpose, much cried up.

Take of Seeds of Mallows, Marsh-mallows, each two Drachms and half; of fat lenten Figgs, cut and sliced, number nine; Sebestens in number seven; boil these Ingredients in three Quarts of Water, to three Pints: This soft and slippery Decoction, like that for making Syrup of Marsh-mallows, on the pectoral Decoction, in the London Dispensatory, may be improved by other diuretick Ingredients, (viz.) Seeds of Burdock, Roots of Fennel, Violets, Eringo, wild Carrots, Juniper-Berries, &c.

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In a Fit of the Stone likewise, the Decoction of the Flowers of Camomile, is much applauded by some worthy Physicians; and that of the Water-Lilly; and if some Drops of sweet Spirit of Salt, or Vitriol, were added to each Draught of such diuretick Apozems, their Force would be still improved.



IV.

To preserve from, or prevent the return of Fits of the Stone, or Gravel, when the Paroxysms cease.

GENTLE Purgatives of *Sena, Rhubarb, Elixir Salutis, &c.* taken once in a Month or six Weeks, are beneficial, as they cleanse the Stomach, and their appending Roads from their Impurities, and the crude and unconcocted Remains of the Foods ingested; but the best Way is frequently to use purg-
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ing Mineral Waters; and in the Intervals, diuretick and alterative Remedies, should be taken, such as these that follow.

Take of the Pulp of candied Citron-Peel, and of the Root of Marsh-mallows, each an Ounce; of Species Dialthææ, and Diatrachanth frigid, each a Drachm and half; of Crabbs-Eyes, two Drachms; of the Seeds of Purslain, and white Poppies, each a Drachm; of the Fruit of Alkakengi, two Scruples; of Gumm Arabick, two Drachms; Syrup of Marsh-mallows, as much as will make an Electuary; take the Quantity of a large Nutmeg, or small Chesnut, twice a Day, Drinking after it, a Quarter of a Pin: of the Decoction for the Syrup of Marsh-mallows.

But for cleansing the Kidneys, and carrying off the Sand and gritty Concrescences, lest by daily Augmentation, they should at last form a larger Stone, slippery and oily Remedies, and Turpentine, such as mentioned above, Whey, and above all, unpurging Mineral Waters of all Kinds, but chiefly the Chalybeate, such as *Tunbridge*, must be relied upon; or the *Islington* Waters, call'd *New Tunbridge*.

Tunbridge. *Millepedes*, are also a good Diuretick in this Case: But I have above treated on this Subject, where I have discoursed on the Gravel, and small sandy Concretions, which are the minutest real Stones, and the Seeds and Rudiments, that by their Confluence and Coherence, produce those of a greater Dimension, and to that Discourse I refer the Reader; for the true Method of preserving the Patient from the Return of his Paroxysms, is to prevent the Generation of such fabulous Materials, out of which the Stone is made, or to carry them off before they have formed such large Bodies.

It is very useful in a Paroxysm of the Stone, to go into a *Bath* of Spring-Water moderately warm, which by stopping Sweat and Perspiration, and soothing the Spirits, relaxing and dilating the Fibres, promotes Urine, and therefore the Protrusion and Expulsion of the Stones, that hang or stick in the Ureters; which after they have acquired a considerable Magnitude, will notwithstanding strive and make their Way for a while through those Tubes, which are much stretched and enlarged, by being the beaten Road for Stones to pass from the Kidneys to the Bladder; yet at length they encrease to such a Size, that when they have entered the Orifice of the Ureter, and
are

are incapable of proceeding farther, they plug up the Passage, and stop the Current of the Urine; and if afterwards another Stone of such a disproportionate Size, should fall from the Kidney into the Mouth of the other Tube, a total Suppression of Urine and Death in a short Time, that is, in ten or eleven Days, are the Consequence; for a total and destructive Stoppage of the Urine, cannot arise from the Obstruction of one Ureter; for Nature that has framed so many double Organs for other Functions, two Eyes, two Ears, two Jugular Veins, two Lobes of the Lungs, &c. that if one of these Instruments should be lost or become defective, the other, at least in a great Measure, might perform the Office of both; so it has evidently for the more certain and effectual Secretion of the Urine, provided a pair of Conveyances, one in each Kidney, that if one be entirely disabled and stopped up, the other may do double Duty, and discharge the Portion of Serum, that used to run through the other Aquæduct. It is therefore evident to a Demonstration, that no total Suppression of the Urine can happen, where both the Ureters are not entirely stopped; and it is hard to conceive how at any Time two Stones should at once fall down, one from each Kidney, and stop in the same Instant, each of those Organs

of Separation: If therefore a full Stoppage of Water happens, and neither of the Ureters was before that Time obstructed, it is most agreeable to Reason, that we should assign another Cause of that Event, that is, a paralytick Impotence of the secretory small Tubes and papillary Glands, which strain the Serum from the Blood, through the Kidneys and Ureters, into the Bladder; for if these secretory Tubes by a *Paralysis* affecting the Spirits residing in them, quite lose their Tension and falling flat together close up their *Foramina*, or Passages, no Serum can be longer separated from the Blood, or conveyed into the Receptacle of the Urine; and this will prove as effectual and adæquate a Cause of a total Obstruction of Urine, as if both the Ureters were compleatly stopped by the falling of two Stones of disproportionate Size into their Mouths. And this was the Case of an illustrious Person, one of the first Rank of the *English* Nobility, who having for several Years been afflicted with the Gout, one Day felt a severe Pain in one of his Shoulders, which after some Time ceased to afflict him; but he had not been long at Ease, when the Flow of his Urine was entirely interrupted, and continued so to the eleventh Day, when the noble Patient expired, notwithstanding all the Means and Methods that his

his Physicians, of whom I had the Honour to be one, could direct for his Recovery. Upon opening the dead Body there appeared, when the Kidneys were divided, some small Stones in the *Pelvis*, and others entangled in the Fibres or Strings of the Kidneys, but no Stone in the Mouth or Channel of either Ureter; so nothing can be more certain, nor more obvious to the meanest Capacity than this, that the Stone could not be the Cause of hindring the Water from descending into the Bladder, no Stone being found in the Ureters, nor in the Kidneys, of a Size capable of stopping the Tubes before-named; and had there been bred in the Kidneys, any Stones of a sufficient Bigness, to have compleatly stopped the Ureters, yet it must be supposed, as before suggested, that two Stones of such a Magnitude fell at the same Instant, one into the Orifice of each Ureter, else a total Suppression of Urine could not have followed; and this must be supposed scarce ever to have happened, and is but barely possible. But *de facto*, there were no such Stoppage found in either Ureter. Yet notwithstanding one of the Physicians declared his Opinion, and obstinately persevered in it, that the Suppression of Urine, of which the Patient dyed, proceeded from the Stone in the Kidneys.

These are the best preservatory Means against the Return of this formidable Disease, since the true and effectual Way, as mentioned above, is either to enable the active Principles of the Blood to keep the Mass in such an equal, regular, and just Mixture, and to refine and exalt it to such an healthful State, as may prevent the Generation of hard and gritty Concrescences, that as they are the Foundation of the Stone, so they administer Materials for the Superstructure; and for procuring this End, the Remedies already enumerated are most availing, in as much as they animate and enliven the Spirits, refine and elevate the Mass of Blood, and dissolve and sever crataceous or sandy Coalitions, by maintaining its Circulation with a due Celerity. To these may be added such Medicines as subdue the acid and acrimonious Quality of the Juices, by blunting and smoothing their sharp Points and Angles, such as *Coral*, *Crabbs-Eyes*, *Crabbs-Claws*, *Oyster-shells*, and other testaceous, absorbing and correcting Powders, given with *Asses-Milk*, or mixed with other Ingredients in Pills or Electuaries; and likewise those, that are proper to assist the digestive Faculty of the Stomach, to concoct the Foods and Liquors it receives, into a wholesome well-laboured and duly mixed Mass of Chyle, that the unconcocted

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concocted and faculent Parts, the first Seeds and Principles which by their Union and Coacervation produce the Stone, may be prevented.

The Forms of such Medicines that promote Digestion in the Stomach, are such as these.

Take of Conserve of Roman Wormwood, of candied Citron Peel, or the outward yellow Rind of the Orange, each an Ounce; of Coral, Crabbs-Eyes, and Pearl, each a Drachm; of candied Nutmegs, a Drachm and half; of Salt of Wormwood and Tartar, each two Scruples; of compound Powder of Wake-Robin, and the Leaves of Chamæpitys, each a Drachm and half; of the Syrup from candied Nutmeg, as much as will make an Electuary. Take the quantity of a large Nutmeg, every Morning and Evening, drinking after it, a Glass of Wormwood-wine, or the Infusion of the Root of Gentian, or Twenty Drops of the Tincture of Gentian in a Glass of White-wine.

Or, Take of the Tops of Roman Wormwood, and the lesser Centaury, each half a Pugil; of the Root of Gentian, and Virginian

ginian Snake-root, each a Drachm; of Cardamom Seeds, two Scruples; of Coriander Seeds, two Drachms and half; of Salt of Tartar a Drachm; infuse all in a sufficient Quantity of Spring-Water to a Quart; strain it, and add to it, of compound Wormwood, and compound Gentian Water, each an Ounce and half; take a Quarter of a Pint each Morning fasting, and also in the Afternoon, about three Hours after Dinner.

Sometimes Take of Elixir Proprietatis tartarised, five and twenty, or thirty Drops in a Glass of Mountain White-wine, twice a Day, viz. at about Eleven and Four.

Besides these Remedies, moderate Exercise, pure and well ventilated Air, Regularity and Temperance, in Eating and Drinking, must be carefully observed, without which the best Methods of Physick may be unavailing.

As to those Medicines called by the Greek Physicians *Lithonriptica*, that is, such as break and dissolve the Stone, either in the Kidneys or Bladder, and to which many Empiricks have pretended, assuring us that they gradually wear and crumble it away, and re-
duce

duce it to such minute Fragments, that they easily pass the Ureters into the Bladder, and with the same ease slide through, and are excluded thence together with the Urine: I acknowledge I am incapable of conceiving how a Medicine ingested by the Mouth can produce this Effect. It is true, that the celebrated *Carthaginian* General *Hannibal*, as Historians report, found means by Vinegar, or some invented sharp and acid Liquor, to dissolve the *Alpine* Rocks, and so to eat his Way through those Mountains into *Italy*. But if any Patient, afflicted with the Stone, should swallow a proper Quantity of this powerful Fluid, were it to be had, or any other of like Vertue, since it must first undergo a great Alteration by the Ferment and digestive Faculty of the Stomach, and then a farther by mixing with the bilious Humours descending from the Gall-Bladder, and afterwards with the acid Juices issuing from the *Pancreas*, and then another by passing the lacteal Strainers, and mingling its Stores with the Lympha brought by numerous Water-Pipes into the common Receptacles; then another by its Admission into the Veins, where during repeated Circulations with great Celerity, the Parts by innumerable Attritions, Reverberations, and Glances from their violent rushing and beating one upon another, receive
great

great Comminution, and are attenuated, exalted, and smoothed, till they acquire a refined volatile State; and at last of all, since they must receive another Alteration by entering and passing the urinary Strainers in the Kidneys: Let, I say, all these Changes be contemplated, and will not, do you think, the Medicine ingested be unedged and disarmed of its sharp Points and Angles, and lose all its dissolving or Stone-cutting Quality? For no acid Juices, not Vinegar itself, continue acid after they have mingled and circulated with the Blood, and have felt for some Time, the digestive Power of its active Principles.

Those bold Persons therefore that pretend to be Masters of Remedies, which given by the Mouth, will break or dissolve the Stone in the Kidneys, or the Bladder, impose upon Mankind, not only because the Medicine loses its peculiar Qualities, by undergoing such a Variety of Changes and Alterations, as have been enumerated, but likewise by mingling and being diluted with above Twenty Pound of Blood, (for few Men have less) and frequently running its Circuit with it, by which means it becomes quite another Thing, before it reaches the Stone it was designed to dissolve, or crumble to pieces.

It must be observed, that as above-mentioned, there are some porous, light, and friable Stones, whose Constructure is so slight, that they will by a little Shock or Collision, crumble, and be divided into small Fragments, while the Parts of others so strictly cohere, that they are scarcely capable of Separation; and it is of these harder and more solid Stones that I speak, when I say they cannot be broken, or cut in pieces, by Remedies given at the Mouth, but they defy the Edge of the keenest *Lithon-*
triptick Weapon in all the Arsenals of *Greece*.

When therefore Stones or Gravel are at any Time removed from the Kidneys, and excluded with the Urine, it is not by Vertue of any Stone-breaking Medicine, acting upon them, but by the Operation of its diuretick Quality, exciting a great Separation of Serum, which rushing in a swift Current through the Kidneys, washes away in its Streams the Gravel and Stones lodged there, that by their proportionate Magnitude are capable of passing the Ureters, as a sudden Storm or sharp Shower of Rain, rolls down the Streets in its Torrent, the Sand and loose Stones, as well as other promiscuous Impurities to be carried off by the common Drain: Though it is very probable that sometimes this Flood of Serum,

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transmitted from the Veins by its immoderate Quantity, as well as the Strength of its Tide, in its Passage through the Kidneys, may likewise disunite, and shatter to Pieces some smaller friable Stones, whose Parts hang together by a very slight Connexion.

But if Nature or Art can afford any Medicines, that are capable of breaking a hard large Stone in the Bladder, the most probable Way of making them effectual, would be to inject them directly into the Bladder; for then, having undergone none of those various Alterations above enumerated, which those Remedies must do that are taken by the Mouth, they would exert their Stone-dissolving Virtue, if they have any, entire and undiminished, and would have the great Advantage of acting upon it by immediate Contact, by which means the Stone in the Bladder, if it could be effected by Medicines, would be wasted and moulder away. But Experience shews that this is not found practicable; for were such a Medicine discovered, it would prevent the Tortures and Misery of many unhappy Patients, and make the useful Art of Cutting for the Stone unnecessary, of which I shall speak afterwards.

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When large Stones are bred in the Kidneys, or such as cannot pass, but with great Pain and Difficulty, all forcing diuretick Medicines must be forborn, and only such as are smooth, oily, and slippery should be employed; lest such as powerfully provoke Urine, should disturb and push forward the bigger, that lay quiet in the Kidneys, into the Ureters, where they will either stop at the Entrance, or stick in the Passage, and by that Means either shut up the Mouth, or create a violent Fit of Pain, together with bloody Urine, if their Surface be rough and ragged; and therefore in such Cases, slimy, soft, and mucilaginous Remedies, are chiefly to be depended on, to promote the slipping of the Stone into the Bladder: And if active Diureticks, have been employed in vain to push on the Stone, which often happens in a violent Paroxysm, opiate Medicines of good Force should be given, that the Fibres of the enclosing Membranes, whilst stimulated by the Torture of the Stone, and urged by the Medicine designed to expel it, being eased and lulled by their narcotick Vertue, may cease to contract themselves and clasp the Stone so closely, and by dilating and relaxing themselves while at Ease, may make Way for it to slide through into the Bladder.

But if the Stone in the Kidneys is large, solid, and branches through their Substance, no Means at all should be used for its Cure; for if there are any Remedies that have Power to break and dislodge its Fragments, which I believe, as I have said, there are not, what would that be, but to send them down to stop the Ureters, or to give unsufferable Torments, by sticking in their Channels!

As to the Stone in the Bladder, which, as said above, is no more than a Stone first bred in the Kidney, and thence conveyed through the Ureters; where it receives its oblong Figure, into the Bladder, and gains there such a Magnitude, that it becomes incapable of being expelled with the Urine, being fed and augmented continually with new Gritt and sandy Materials washed from the Kidneys and falling down into the Bladder; when it first descends into that Receptacle, and its Size does not exceed a due Proportion, while it floats in the Urine, it often plays, aims, and offers at the Orifice of the Urethra, but its Figure or Position not being accommodated to it, cannot pass through that urinary Channel; and then it not only creates great Uneasiness, by lying cross its Mouth, but likewise often by interrupting the Streams of Urine, and some-
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times by totally obstructing the Passage. When the Gravel, or Stone, or Stones, are yet small enough to enter and pass the Urethr, to facilitate their Discharge, the Veins should be filled with such diuretick Liquors, as I have before set down, that they may communicate a constant Flow of Urine to the Bladder, which being commonly kept full, will be the more apt to eject the Stone, together with the Flood that distends it. But if it grows so great, that it becomes unable to make its Way, by Reason of its disproportionate Size, it will be daily augmented by the Accretion or Addition of new Gritt or Gravel, carried from the Kidneys, through the Ureters, by the Streams of Urine, as Sand and small Stones, are rolled along from a rising Ground, by Rills of Water, that flow down its Sides. Now these Sands or minute Concretions, as I have explained above, are the Seeds, or Mother of the Stone, that is, the Principles or first Materials, that combine for the Formation of it in the Kidneys, and afterwards to its Augmentation in the Bladder; and to hinder its encreasing there to a great Magnitude, those Remedies are to be used which were enumerated before, for cutting off the Generation of Gravel, and such sandy and fabulous Combinations; to which I refer the Reader.

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But if through Neglect, or the Inability of Methods and Medicines to prevent the breeding of Sand and Gravel in the Kidneys, which washed away by the Urine into the Bladder, constantly feed and amplify the Stones confined there, which grow not like Animals and Vegetables, by Nourishment admitted by the Mouth or the Root, and conveyed and distributed to the outward Parts from the inward, but by the daily Access, Accumulation, and Adhesion, of hard, sandy Particles to the Surface of the Stone; if, I say, the Stone, by the Arrival and Complication of new petrifying Principles, becomes large and ponderous, and being attended with a terrible Train of Symptoms, that render the Patient a great Object of Compassion, while Death is more eligible than Life, and no effectual Means can be suggested, how it may be cut, dissolved, or crumbled to pieces, as I have before demonstrated, all that can be done by Medicine, is to quiet or reduce the enormous Pains and Torments, inflicted by this cruel Disease; and for the effecting of this, only *crude Opium*, or its Preparations, the Gift of Divine Benignity to mitigate the Tortures, and alleviate the extream Miseries of Mankind, can be depended on. This is the Patient's Refuge, and the only Con-
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solation to allay his Agonies, and restrain the Rage of his Sufferings. And therefore in this Case, let him take the following Pills.

Take of Saffron, beat small, three Grains; of Extract of Gentian, six Grains; of crude Opium dissolved and strained, a Grain and half; Balsamick Syrup, enough to make it into Pills, for one Dose, to be taken in violent Pains, and repeated when the Force of the first is worn off, if the Torments continue.

But if the Quantity of *Opium* prescribed, is not sufficient to remove the Pain, it may gradually be encreased, by adding a Quarter of a Grain; and if that likewise should be ineffectual, add half a Grain, and so on, till the Patient has found what is the just Quantity that will relieve him, and when he has taken his Measure, and settled the Proportion, he will be obliged to take it as often as his Agonies shall make it absolutely necessary. All smooth, soft, and slippery Meats and Drinks, as well as Medicines must be chosen; for those of an opposite Nature will irritate and enrage the Paroxysm, especially if an Ulcer attends

attends the Stone, which is an incurable Disease: And as Ulcers produced either in the Kidneys, or the Neck of the Bladder, from other Causes besides the Stone, elude the Force of all Remedies, which is likewise the Case of all other internal Ulcers in the Lungs, Liver, &c. so those, that arise from the Fretting and Laceration of the Membranes in the Kidneys or the Bladder, by Stones of a rough and ragged Superficies, can never be healed, at least while the Stone continuing there, is always wearing and wounding the Part where it lodges: And therefore all that can be done, is to drink plentifully of smooth, and soft Liquors, besides taking slippery and oily Remedies, that may constantly dilute and wash away the ulcerous Matter, lest gathering together in too great a Quantity, it should stop the Passage of the Urine; which Obstruction is sometimes so great, that the Surgeon's Hand is necessarily required to pass his Catheter into the Bladder, for the Relief of the Patient, through which the imprisoned Urine may flow freely out; and the Patient is obliged to fly to this Refuge for Ease, as often as Clysters and other Medicines ingested by the Mouth are ineffectual. The soft and smooth Liquors that may assist the Patient, by diluting the corrupt

corrupt Matter, and making it fit to flow, are *Mead*, or other Liquors made of *Honey*; also Decoctions of *Barley*, *Liquorish*, *Marsh-mallows*, *dried Figgs*, and *Raisins of the Sun*, *stoned*; or rather, the following Apozem.

*Take of Flowers of Mallows, an handful;
of Root of Marsh-mallows, half an Ounce;
of sweet Fennel-Root, an Ounce; of
Leaves of Violet, Parietaria, each a
Pugil; of Anise and Carraway Seeds,
each a Drachm and half; boil all in
three Pints of Spring-Water, to a Quart;
strain it, and add of Syrup of Marsh-
mallows, three Ounces; and six Drachms
of the Tincture of Saffron, made with
Treacle-Water; drink half a Pint, or six
Ounces of it, three Times a Day.*

The smoothest and softest Spring-Water, should be chosen for common Drink, such as that of *Bristol*, or any other, that rises from *Chalk-Hills*: A good Draught likewise of *White-wine*, and *new Ale*, [mind this] now and then repeated, is useful to dislodge and carry off the noxious and impure Matter, issuing from an Ulcer in the Kidneys or Bladder; and the Sediment of each of them is distinguished

guished by their slimy, glutinous and ropy Quality, from the white, mealy and light Contents, found often in the Urine, from scorbutick Causes, as above suggested, that by shaking the Glass, will presently rise and float in the Bosom of it, which however has no weight, nor viscous, nor gritty Quality, but swims in pale, discontinued, and incoherent Matter, communicated to the Urine from the Blood, abounding with such Impurities. And they are discriminated from one another, by a fætid and offensive Smell, proper to the Matter discharged from an Ulcer in the Bladder, and contracted from long mixing with the Urine, which is not found in those slimy Contents that flow down from the Kidneys, and are excluded with the serous Streams, as I have above explained.

After all, when notwithstanding the due Care and Observance of the best Rules to prevent it, the Stone in the Bladder grows very large, and the Pains are greater than Humane Patience can bear, the last Refuge from this dreadful Tormentor, is manual Operation, when Incision is made into the Bladder, and the Stone extracted through the Wound. So strong is the Principle of Self-Preservation, and so terrible the Idea and Apprehension of Death,

Death, that to continue a little longer in Being, Men submit, not only to a great Variety of lingering Sufferings and Calamities, but likewise to the acutest Pains, of which their yeilding to this Method of curing the Stone, is a most convincing Evidence.

Though the Cutting for the Stone is a painful Operation, and attended with the Hazard of Life, yet many Patients have been relieved by it, and continued well after it for many Years, especially those, that were Cut in their Youth. Yet it must be acknowledged, that many also have miscarried, either from the Nature of the Stone, their ill Habit of Body, the Unskilfulness of the Operator, or his want of sufficient knowledge in Surgery to heal the Wound. And this Misfortune often happens likewise from the Patient's deferring the Operation too long, out of an Abhorrence of the Violence of the Cure, or from flattering Hopes that the Disease will not arise to that Extremity, and torment them with such insufferable Symptoms. It is therefore the Interest of Persons afflicted with it, to undergo the Operation, by which the Stone is extracted, when as yet it is of a moderate Size, and therefore more Easily to be drawn through the Wound, and before their Strength is ex-

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hausted by long Sufferings, and repeated Paroxysms of Torture, and before the Ulcer that is often formed by it, becomes deep and inveterate; and then, while their Vigour is unwaisted, and their Constitution otherwise hail, and the Stone not of an extraordinary Magnitude, the Operation is likely to be successful: And if these Rules were observed, the Lives of many of these unhappy Patients might be saved, that are lost for want of a timely Submission to this Method of Cure.

When the Stone, lapied from the Kidneys into the Bladder, are not augmented there to that Proportion, as makes them incapable of entering into the Mouth of the *Urethra*, yet sometimes after it has entered, it is however too large to make its Way through that Aquæduct, and therefore stops in the Road, where it not only creates great Pain, but likewise obstructs the Current of the Water, till at length there is no Remedy left but the Surgeon's Art, who in this Case easily relieves the Sufferer, by cutting upon the Stone where he feels it lodged, and thrusting it forth through the Orifice of the Wound: And this is the most practicable and least dangerous Instance of Cutting for the Stone.

As for Cutting into the Bladder, and extracting the Stone thence, various Methods have been invented, of which a distinct and accurate History is not the Business of this Dissertation: It is enough for me in this Place to mention the most Practicable and safest Way, and this, as I am informed, is that of cutting into the Bladder, in the Region above the *Os Pubis*, lately brought into Use. Whether there occur any dark and obscure Hints of this Practice in ancient or modern Authors, or whether the first Invention does Honour to the ingenious Surgeon Mr. *Douglafs*, it is certain, that either as Reviver or Inventor of this new Method, he has deserved well of Mankind, and merited the Thanks and Esteem of all the Faculty, since all Ways of performing this Operation known before, were accompanied with more difficulty, more suffering, and greater Hazard of Life.

Before the Patient consents to undergo this Method of Cure, great Care and Caution should be used, that the Operator may be sure himself, and so able to satisfy the Patient, that there is a Stone in the Bladder, the Cause of all his painful Symptoms, and fit to be extracted. For there have been other Diseases of the Bladder, that have so perfectly imitated the

the Stone in all its Symptoms, and have imposed upon Surgeons, eminent in their Art, who after strict Search have pronounced the Case to be the Stone, yet when they have cut the Patient to relieve him, no Stone has been found, and upon opening the dead Body, either a *Fungus*, or some Excrescency, grown to a great Bigness in the Neck of the Bladder, or some other Disease, or Errour of Nature in the Bladder, appeared to be the only Cause of all the Nephretick-like Symptoms, that afflicted the Patient: And therefore, I say, the Undertaker, before he attempts the Operation, ought with the greatest Deliberation, and most careful Scrutiny, to get the fullest Conviction in himself, of the real Existence of the Stone in the Place he expects to find it.

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Note, When I first began with this little Piece, I design'd to have ended it, with something relating to the Dissolution of the Stone, in the Kidneys and Bladder, but when I came to read over the various Authors,

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pro and con, upon the Subject thereof, and saw the Necessity there would be of Transcribing the Methods, and reciting the Cases, where it had, and where it had not been practicable, I found it would swell it to a bigness, beyond what I intended it; and besides, I having at this present, two Patients, one with a Stone in the left Kidney, and the other in the Bladder, under my Directions, in order to a Dissolution, by the same Means and Methods, others have assur'd me, they have succeeded in, I was willing to wait a while, (as it can't but be a Work of some Time) to see the Event thereof, before I did it, tho' I hope now it won't be long, and then I shall, I believe, be able (and I am sure, gladly willing) to communicate the Success, and shew how and by what Means the same was brought about, for the Service of my Fellow Creatures, I intending to publish them, with the others I have named, as a Second Part, to make this First Part compleat.



